ESTHER DYSON'S MONTHLY REPORT

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Who Controls Information?

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Welcome Griffin Felshman and Eli Werbach to the EDventure family!

BY KEVIN WERBACH

Efforts to enforce strict copy protection online are drawing the ire of the information technology industry and end-users. One side views cyberspace as a greenfield for innovation and an opportunity to re-order commercial and administrative relationships. The other sees chaos and lawlessness standing in the way of business and decency. As with broadband open access, the Microsoft trial and Internet governance, the central issue is control: Who decides what information goes where, on what terms?

The conflicts seem implacable. Yet there is hope for compromise, because both sides are at war with themselves. The enlightened self-interest of businesses and that of end-users converge somewhere in the murky grey area between total control and total freedom. Entertainment companies have more common cause with the technology industry and with their mutual customers than they realize.

Who controls information is usually considered a policy question. It's true that government is frequently involved, willingly or unwillingly, in resolving disputes about what constitutes appropriate use of content and other resources. Partisans often invoke concepts such as freedom and the rule of law.

In our world, though, control is also a *business* issue. Cable operators' worries about ceding control over their broadband platforms – and related revenue – have slowed the rollout of high-speed Internet access in the US. Content publishers' concerns that their valuable assets will be duplicated widely without permission have similarly dampened their enthusiasm for digital media. Worries

{ *continued on page 2* }

about litigation have impeded deployment of some innovative devices and services, and have prevented others from being funded.

At this year's PC Forum, we had a panel called "The Battle for the Soul of the Net" (SEE RELEASE 1.0, MARCH 2002). The debate took place soon after the US Congress held hearings on digital content protection, and it echoed the positions expressed in Washington: content owners[1] worried about piracy, and technologists worried about limits on innovation. In this issue, we take a deeper look at what's going on, and examine whether there is any hope for reasonable solutions.

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EDITOR-IN-CHIEF: Esther Dyson (edyson@edventure.com)

PUBLISHER: Daphne Kis (daphne@edventure.com)

EDITOR: Kevin Werbach (kevin@edventure.com)

SYSTEMS DIRECTOR: Scott Giering (scott@edventure.com)

CIRCULATION MANAGER: Natasha Felshman (natasha@edventure.com)

EXECUTIVE ASSISTANT: Irene Lawrence (irene@edventure.com)

CONSULTING EDITOR: Bill Kutik (bill@kutik.com)

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Looking for the Silent Majority

Listening to the rhetoric on both sides, you would think the entertainment industry is comprised entirely of fascists, and the technology industry is made up of thieves. That's not the reality. Most people would never rob a bank, but would run to grab hundred dollar bills off the street if bags of money fell out of an armored car in front of them, even though they knew the money wasn't theirs. Similarly, banks know their customers wouldn't tolerate being strip-searched every time they walked into a branch, even though that might cut down on robberies.

The reasonable center of the digital intellectual property debate has been losing out to the extreme fringes. Distinctions are being lost between piracy and reasonable consumer desires to experience the content they've paid for in a time, place and manner of their choosing. The resulting fracas isn't just threatening free expression, innovation and the business prospects of digital media. It's obscuring the deeper problems with intellectual property protection in a digital age.

Fortunately, new organizations such as Creative Commons, Public Knowledge, DigitalConsumer.org and ChillingEffects.org are rising

[1] Instead of calling the entertainment companies "owners" interested in "protecting" their "content," we could describe them as "rights-holders" implementing "copy prevention." There are reasonable arguments for doing so, but we don't want to get caught up in semantic debates. We simply use the most familiar terms.

to the challenge. Established groups such as the Electronic Frontier Foundation (EFF), Center for Democracy and Technology (CDT) and Long Now Foundation are also launching initiatives in this area. These aren't just advocacy efforts. They offer mechanisms to reshape IP (intellectual property) consistent with IP (the Internet protocol).

How to give information what it wants

If, to use Stewart Brand's aphorism, information wants to be free, how can it be so in the sense of free speech and not in the sense of free beer?

When asked about his famous remark, Brand immediately points out that his next sentence was that information also wants to be expensive. And that tension hasn't gone away, Brand says: "The Web, and storage and bandwidth costs coming down, make it easier to casually distribute information. At same time, there is ever more of an information economy where the right information at the right time is incredibly valuable. The combat between those two perspectives is getting steadily worse."

Remember, intellectual property protection is a legal construct. It doesn't stand still. Its parameters have evolved over time in response to changed circumstances, changed social values and new legal doctrine. For many years, US courts held that software could not be patented. And then, almost overnight, it could. This change influenced the shape of the software and Internet industries we know today.

In the realm of digital content, we are reaching an inflection point. The Net and related technologies so alter the circumstances of production, distribution and use of content as to create a qualitatively new environment. Our institutions and practices aren't prepared to handle this situation. "The law made sense (sort of) before the Internet; it is increasingly senseless on the Internet," says Stanford Law School professor Lawrence Lessig, a leading critic of the current drift in digital IP.

For example, the law never regulated *how* someone used copyrighted material. Whether I read the latest Stephen King novel once or ten times is my business, so long as I obtain the book lawfully. No new "copies" are created. However, every time I read the e-book version of the same novel on my computer, a new copy is loaded into memory. If the publisher only wants me to read the book nine times, my doing so a tenth time becomes a copyright violation. (And, as we discuss below, removing the code that enforces that limit is against the law.)

Thanks to an accidental technical feature of the Net, the scope of copyright law has expanded. And this is just one of many examples. We must consider the consequences, rather than proceed as if nothing has changed. Says Lessig, "This is not to say copyright is dead; it is instead to insist that the law needs to be rebalanced to take into account the difference the network brings."

Under the right conditions, the ruthlessly efficient and unsentimental force of the free market will clear cut the virgin forest of information, leaving nothing but stumps for those who come later. We need to throw small amounts of sand into the sawmill gears of the friction-free economy, so that there is room for coexistence among different parties. We should start with historical escape valves and balancing mechanisms, such as fair use in copyright, and explore creative ways to preserve the information commons in parallel with private enclosures.

The Control Wars

At the extremes of the battle over information control, there is indeed a clash of philosophies. As author David Bollier (SEE PAGE 19) observes, "There's a struggle almost between two different worldviews about how creativity and knowledge occur." One side emphasizes the need for controls to capture value from innovation. The other sees a vital role for a vibrant public sphere in nurturing that same innovation, and allowing innovators to build on the work of their predecessors.

These worldviews collide in a digital context that challenges traditional distribution channels, business models, regulatory systems and governance mechanisms.

As commentator Andrew Shapiro pointed out in his 1999 book, THE CONTROL REVOLUTION (SEE RESOURCES), and others have also articulated, the Internet changes the control dynamics in many areas of society. The Net lets individuals reassemble personalized news feeds from a plethora of sources, freeing them from the constraining filters of established media organizations. It allows dissidents to communicate with the world, evading government censors. It gives day traders the power to move markets, without relying on traditional investment banks and brokers. It lets individuals and private organizations assemble the databases of personal information that once only governments and a few large corporations could compile.

Though the Net was originally seen as inexorably reducing the power of traditional gatekeepers, that's not necessarily the case. Perceptive observers predicted there would be resistance to the decentralizing force of the Net, and that both individual "freedom fighters" and those seeking central control would likely engage in what Shapiro called "oversteer" to extremes.

Absolute control corrupts absolutely

During the past two years, several developments have stoked fears that we are oversteering toward excessive intellectual property controls. Lawrence Lessig's THE FUTURE OF IDEAS (SEE RESOURCES), published last year, documented the efforts of companies such as cable TV operators and content creators along several fronts to re-architect the Internet to strengthen their control. The Recording Industry Association of America (RIAA) and Motion Picture Academy of America (MPAA) launched a legal assault on Napster, other file-trading communities, MP3.com and ReplayTV, winning significant victories.

In the latest salvo, US Senator Ernest Hollings introduced the Consumer Broadband and Digital Television Promotion Act, which would mandate copy-protection technology in virtually every computer and consumer-electronics device. Prospects for quick adoption of the bill appear slim, but several powerful senators have expressed support. At hearings on the legislation, entertainment industry figures such as Disney's Michael Eisner and Peter Chernin of News Corp. railed about the IT industry's unwillingness to address piracy. Intel's Les Vadasz (SEE RELEASE 1.0, MARCH 2002) was the only technology industry representative testifying at that initial hearing.

The content industries have a point. If anyone can get whatever content they wish for virtually no cost, the businesses devoted to selling content will collapse. Then again, one might ask, do they have an inherent right to exist in their current form?

Publishers and distributors provide many useful functions, from picking out talented artists to assembling the financing and other resources necessary for large-scale productions, to helping end-users navigate among a sea of choices. They need some degree of control over their products, as does any business.

But that's not the same as saying they must have total control from end to end, or that their existing business models are sacrosanct. We've suggested alternative models in the past, based on delivering "intellectual services" such as subscriptions and access, instead of selling copies of content. (SEE RELEASE 1.0, JANUARY 1996 AND

DECEMBER 1994, AND ESTHER DYSON'S BOOK RELEASE 2.0.) In the end, the goal of intellectual property protection is to motivate (by rewarding) the creators, not to take care of particular intermediaries.

Where is it going to stop?

Control – by individuals, corporations, governments or any other party – isn't inherently good or bad. . . though unfettered control invariably *turns* bad. A finer-grained analysis should guide rational choices about whether, where and how to erect control points in cyberspace.

Gigi Sohn, president of Public Knowledge (SEE BELOW), sums up the issues at stake: "The over-arching concern we have is that the balance that was struck 250 years ago – between providing incentives for a creator or innovator, and providing the public with a robust domain for sharing ideas – is out of whack. Where is it going to stop?"

There are several theatres of conflict over who controls information in the digital age. Some, such as the open-access debate involving broadband Internet services, we've addressed at greater length in the past (SEE RELEASE 1.0, FEBRUARY 2002, JULY 2001 AND FEBRUARY 1999). Cable and telephone companies still claim they need total control over their broadband platforms or they won't have incentives to deploy. Several of them, however, are negotiating private open-access agreements with independent ISPs, either voluntarily or pursuant to merger conditions. Expect intense lobbying activity around the Tauzin-Dingell legislation in the US Congress, which would remove some obligations on local phone companies, and around a set of inter-related FCC proceedings now ongoing.

Meanwhile, the Internet Corporation for Assigned Names and Numbers (ICANN) is locked in debate over whether to give greater power to governments and less to individuals. ICANN was created as a private, bottom-up organization to oversee Internet domain names and other identifiers. There is now widespread agreement that ICANN is broken. Its president, Stuart Lynn, issued a report in February (SEE RESOURCES) arguing that the effort to create a functional non-governmental consensus-driven governance body had failed. [*Esther Dyson, who was the founding chairman of ICANN and is actively involved in trying to reform it, plans to include a discussion of ICANN in next month's issue.*]

Finding a middle ground

In this issue, we focus primarily on copyright, because the battles are more advanced and intellectual property so squarely poses the control issue. Understanding this area provides the beginnings of a framework to address some others.

The simple solutions here are usually the wrong ones. Instead of sweeping principles, we need distinctions and balancing mechanisms, limits and nuances. Unrestricted personal use of content isn't the same as unrestricted commercial distribution. Al using a few seconds of *Spider-Man*® for a report in school or a critical essay is permissible fair use; Ethel selling a DVD with that same clip and unauthorized scans of comic books is illegal. What seems at first like a threat to content businesses (for example, the VCR) may turn out to be a profitable new channel for them.

We just don't know for sure. Given all the uncertainties and complexities, the tail of copy protection shouldn't be allowed to wag the Internet dog.

The content companies don't meet in some dark cave with the Illuminati to formulate master plans for destroying the America way. Some find themselves on multiple sides: AOL Time Warner is a massive content provider in many media, but also an ISP and owner of the WinAmp MP3-playing software; Bertelsmann is both a major record label and (thanks to a buyout this month) the new owner of Napster. In general, the movie studios and TV broadcasters, facing the threat of mass piracy – and new forms of competition – for the first time, are the most aggressive proponents of mandated restrictions. Most of the music industry grudgingly acknowledges that it must evolve its business models, because P2P file-sharing won't go away.

All the content owners will do what they believe is in their business interests. That puts the onus on them – and their erstwhile opponents – to figure out just what are the workable business arrangements in this digital era.

A Tour of the Battlefield

Copyright, round 1

"The content companies are having an ongoing slow-motion freakout about the inherent duplicability of digital content," says Mike Godwin, a former advocate with EFF now at CDT in Washington. The Digital Millennium Copyright Act (DMCA), passed in 1998, was a preemptive strike against the potential of the Net to under-

BASICS OF DIGITAL IP

Longtime RELEASE 1.0 readers know that intellectual property conflicts are among the thorniest policy issues posed in cyberspace (SEE RELEASE 1.0, AUGUST 1989). The roots of the problem are simple and unavoidable: Copies of digital objects are identical to the originals, and the Net is the most powerful distribution platform for content the world has ever seen.

Stripped to its essence, intellectual property law grants creators limited monopolies on their products, either as a matter of moral right (the European view) or to promote economic benefits by stimulating the "useful arts" (the pragmatic American approach, dating back to the Constitution). In other words, it's a mandated form of control, which necessarily limits everyone else's freedom to do as they please. Just as my right to swing my arm freely ends when it comes into contact with your nose, intellectual property's grant of control extends until it imposes too great a cost on others.

Thus, for example, under the doctrine of fair use, Al can't xerox Ethel's book and hand out copies to all his friends, but Ethel may not stop Al from quoting as much of the book as he needs to in order to make a point in a critical review. Similarly, Xerox can stop other companies from using its trademarked name without permission, but can't stop us from turning it into a verb and printing it in the previous sentence. No one controls the English language (though expansive new trademark "anti-dilution" protection may give the Xeroxes of the world some claims even in this domain.)

The Net threw the settled IP equilibrium out the window, by dramatically lowering the costs and difficulty of copying. Previously, music lovers could make tapes of their CDs and send them to friends, but it took time to do so, cost money and usually resulted in degraded copies. Napster and its ilk change that equation.

As we describe in this issue, though, the Net can also support technology that – if its use were mandated – could impose greater physical control over content, at costs in convenience for users and in freedom to innovate for developers.

mine the established intellectual property regime. It has been invoked in several high-profile lawsuits, including the recording industry's legal action against Napster, Kazaa and other file-sharing services.

As several cases illustrate, the DMCA is more than just an extension of traditional copyright principles to the digital world. "The DMCA essentially overrides copyright law and makes certain fair uses impossible," says Gigi Sohn, president of Public Knowledge (SEE PAGE 14).

Upon entering the US, Russian developer Dmitri Sklyarov was arrested for creating software to decrypt Adobe Acrobat PDF files, and the government would not drop the case even after Adobe demurred. Another group of developers was sued for creating drivers to allow viewing of DVDs on Linux systems, because they broke the content scrambling system (CSS) encryption on the disks. *2600* magazine was sued as well, and found liable, for *linking* to the CSS decryption code on its Website.

Much of the controversy over the DMCA, including the cases described above, stems from its "anti-circumvention" provisions. They prohibit breaking the copy protection mechanisms on digital content, or building devices to do so, regardless of intent. Reverse-engineering for research or educational purposes, a common practice in the software world, is strictly prohibited.

As another example, DMCA's "notice and takedown" provisions were designed to protect ISPs who argued they shouldn't be held responsible for copyright violations by their users they didn't even know about. Under these requirements, a service provider that promptly removes the offending material upon notice by the (putative) intellectual property owner can avoid being sued for contributory infringement. Designed as a shield, they are being used as sword.

Earlier this year, the Church of Scientology demanded that Google remove links to several anti-Scientology sites from its search-engine database, on the grounds that those sites were improperly publishing the Church's copyrighted scriptures and other documents. Google felt obliged to do as the Church requested, making numerous pages disappear from the Net's most popular search engine.

Though pointers to the pages were eventually restored (thanks to an arrangement with ChillingEffects.org, which we discuss below), the incident showed the newfound power the DMCA gave copyright holders. The Church of Scientology has used intellectual property law as a cudgel against opponents for years, including shutting down Julf Helsingius' anon.penet.fi remailer in the early 1990s. With the DMCA, though, a resource such as Google that has done nothing affirmatively to foster piracy felt compelled to act first and ask questions later.

Copyright, round 2

The DMCA was part of a larger strategy of the content industries to check the spread of digital piracy. Alongside the litigation, they hoped to put into place standards and digital rights management (DRM) technologies to ensure the content they distributed was resistant to copying. But the secure digital music initiative (SDMI) failed to win support among device manufacturers, and the CSS encryption standard on DVDs was easily cracked. And then, if things weren't bad enough for the content companies, P2P file sharing happened.

In response, the industry has launched a second wave of efforts to regain control over digital media. One element is the Hollings bill. It would oblige device manufacturers and content owners to agree to a hardware copy protection standard that would be required in every piece of equipment carrying digital media. If consensus couldn't be reached privately, the FCC would be called in to decide on a standard.

Hollings and his supporters are right about one thing: It's impossible to ensure perfect copy protection without embedding barriers into hardware universally. No mat-

ter how good the encryption or DRM software technology, someone will eventually find a way to crack it.

The Hollings solution, however, isn't any better. Hardware-based copy-protection is harder to crack, but not impossible, as anyone watching illegal satellite TV can attest. New copy-protected CDs, to cite an amusing example, can be circumvented by scribbling on part of the disc with a Magic Marker®. A computer is a general-purpose device, and once content is in the clear it can be copied and redistributed. Moreover, because entertainment content is destined for our eyes and ears, it must always be transmitted in the clear at some point.

DRM, and hardware-based DRM, are useful technologies for protecting content. The IT industry should be willing to work with content companies to make reasonable use of DRM technologies. However, any discussion postulating that DRM can and *must* be perfect, universally implemented and legally mandated is misguided.

"Cable set-top boxes, television receivers and DVD players are essentially special-purpose devices, so building in DRM and standardizing on DRM in those sectors is a relatively simple problem," says Godwin. He continues: "In the larger IT world, however, digital devices are increasingly powerful, increasingly flexible and capacious general-purpose devices. Trying to control what they do is a lot harder." PCs can only be made as secure as special-purpose consumer-electronics devices if they cease to be general-purpose computing devices. . . but that would be the end of the computer industry as we know it. The open-ended nature of computers is what makes them so productive for business and so rich a tool for individual users.

The BPDG and the standards two-step

As in the first go-around, the content industries are coupling their push for legislation with standards efforts. For several years, they have engaged in working groups with the IT industry, seeking to define standard digital watermarks and other steps to limit piracy. Many standards efforts are productive. Others are the continuation of legislative or corporate agendas by other means.

The Broadcast Protection Discussion Group (BPDG) is working on flags and other standards for digital television content, to prevent it from showing up through unauthorized channels such as the Net. Its consensus recommendations are to be enshrined in an FCC rulemaking governing the production and distribution of digital TV devices, pending Congressional delegation of this power to the FCC.

The BPDG includes representatives of the consumer electronics and computer industry, who (in the shadow of the Hollings bill) would prefer a private compromise to a legislative mandate. Says Michael Epstein, senior researcher at Philips and a BPDG participant, "The digital TV transition hasn't happened as fast was we would like. The content owners argue that one reason is that their content will be pilfered over the Internet." That means striking a balance, he argues: "Copy control measures are never perfect, and they usually harm somebody's interest in some way."

Unfortunately, the BPDG is ill-suited to strike that balance. The group has in the past claimed to be engaged in a public process, but it doesn't have a Website and is closed to the press. "We're using private licensing as an alternative to public policy bodies," says Epstein. In that environment, the interests of end-users, such as their desire to time-shift programming by recording it for later viewing or their desire to move content from one personal device to another, are easily ignored.

EFF outreach coordinator Cory Doctorow has established a Weblog, *Consensus at Lawyerpoint*, to shine light on the BPDG process (SEE RESOURCES). When EFF began sounding the alarm about the group, Doctorow says, "People didn't believe us, because if you searched Google for BPDG, you didn't find anything." A Weblog, he says, is the perfect mechanism for short, quick updates on the BPDG's activities.

Though the BPDG formally covers only digital TV content, PC vendors will have to follow its requirements if they want their machines to handle digital video content of any kind. "It uses regulation through the FCC of digital television devices as a backdoor for controlling everything," says Doctorow. He argues that the DMCA already imposes excessive remedies for infringement, and that, "The BPDG proposal will go one worse and penalize *everyone* on the grounds that they *might* break the law."

Righting Copyright's Wrongs

The first wave of Internet policy challenges brought us EFF, CDT, the Electronic Privacy Information Center and TRUSTe. [DISCLOSURE: ESTHER DYSON HELPED FOUND TRUSTE AND WAS FORMERLY CHAIRMAN AND A DIRECTOR OF EFF.] These groups have become mainstays because the issues they confront haven't gone away. They are engaged in many of the current digital IP battles. However, there is room for new, more precisely tailored organizations that address the core tensions of information control in

novel ways. Four in particular have sprung up this year: Creative Commons, Public Knowledge, DigitalConsumer.org and ChillingEffects.org.

Creative Commons: more measured copyright

A paradox of copyright law is that it's simpler to impose restrictive intellectual property terms than to be flexible. In virtually all the world, thanks to the Berne Convention, merely publishing a piece of content automatically makes it copyrighted. (What constitutes publishing gets trickier in a digital world, but that's a side issue.) Conversely, says Creative Commons executive director Molly Shaffer Van Houweling, "You have to do something – though it's not clear what – to disclaim your copyright and put a work in the public domain."

Furthermore, what copyright entails has changed over time. In the original US Copyright Act of 1790, protection lasted 14 years. Congress has extended that limit with increasing frequency, including 11 extensions in the last 40 years. With the last revision, copyright lasts for the life of the author plus 70 years, or 95 years for corporations, meaning most works remain out of the public domain for over a century.

Sometimes an author doesn't need or want such extensive protection. For example, we'd be foolish to insist that the material you're reading, relating to a fast-changing technology world, stay locked up into the 22nd century. The value of keeping control over RELEASE 1.0 content so that we can sell it drops over time, especially relative to the value (to us and to others) of making it free. Whether the crossover point is five months, five years or 25 years, the default protection of copyright law is much longer.

Moreover, what if we wanted to grant general permission to reprint excerpts of up to two pages, on the theory that they would only help our business by raising awareness and encouraging subscriptions? That probably wouldn't be covered by fair use. Nothing stops us from authorizing such use, but we'd have no simple way to notify interested parties of the less-restrictive terms of our license.

Lowering the barriers

Creative Commons was founded to make it easier for content creators to promulgate such terms. "It has always been possible for people to license their work on generous terms," says Van Houweling, "but we're not sure that many of these copyright holders have the wherewithal to do that without a little bit of help." Creative Commons will seek to lower the barriers. It is building a simple Web application, now in proto-

type, that generates "commons deeds" setting forth terms of use in both plain English and full legal form.

Tim O'Reilly has announced his intention to release O'Reilly & Associates books (subject to author agreement) under a 14-year "Founders' Copyright." The supporters of Creative Commons hope other publishers follow suit.

Putting content into the public domain, or offering a generous license, is only one step. Users who want to make use of the content must have a way to find it and know it's not subject to default copyright restrictions. Today, there are great tools to search for content on the Web, but no reliable way to tell if that content is in the public domain. In short, there is a labeling problem (SEE RELEASE 1.0, MAY 1998 AND DECEMBER 1996). "You'd think we would have come up with ways to identify files by now, or to identify people," quips Van Houweling, but in reality there aren't good mechanisms.

FIGURE 1: *Prototype Creative Commons application.*

Creative Commons hopes to spearhead the deployment of metadata that would indicate digital rights around specific content, and to make it easy to locate particular digital objects using that metadata. Some efforts are underway in these areas, such as the extensible rights markup language (XrML) and TCP/IP co-creator Bob Kahn's Handle project for digital object identifiers, but none are widely adopted as standards. The organization is still deciding whether that means compiling its own searchable content database, helping other directories and search engines such as Google add the necessary capability to their own databases, or a combination.

Creative Commons received nearly $900,000 in startup funding from the Center for the Public Domain, along with support and facilities from Stanford Law School. It has a virtual team of advisors and small full-time staff led by Van Houweling, who previously worked with Berkman Center for Internet and Society at Harvard, as an ICANN staffer and as a law clerk on the Supreme Court.

Lawrence Lessig will teach a reduced courseload next year at Stanford so he can spend more of his time working with Creative Commons. He is also leading a legal

team challenging the most recent copyright extension in court in *Eldred vs. Ashcroft.* The US Supreme Court has agreed to hear the challenge.

Public Knowledge: advocates for the information commons

Gigi Sohn developed a reputation in the Washington public-policy community for her work on media concentration and digital television issues as part of the Media Access Project, a non-profit dedicated to First Amendment and media-related public-interest issues. After a stint with the Ford Foundation in New York, she returned to Washington last year to start a new organization.

Public Knowledge is a policy advocacy group focused on promoting the "information commons" (SEE BOX, PAGE 19). In concrete terms, that means digital intellectual property issues and preservation of the Internet's open, end-to-end architecture. It has grants from Center for the Public Domain and the Cummings Foundation, and is raising funding from additional sources.

In addition to lobbying, engaging in administrative litigation and otherwise advocating, Public Knowledge engages in constituency-building efforts. One group that has been surprisingly unrepresented in the digital IP debates is the creative community. Artists generally want to get paid for their work, but many also want to get their works into the hands of as many people as possible. Different artists see the trade-offs differently. Several individual artists have spoken out against piracy, but most have at best a wary relationship with established distribution channels such as record labels. "The creative interest and the consumer interest are converging," Sohn says hopefully.

Public Knowledge isn't opposed to intellectual property protection, or to reasonable mechanisms to prevent unlawful distribution, Sohn says. What it wants is some balance: "This is not about saying no all the time. This is about trying to find a reasonable solution." That means ensuring that whatever controls are adopted don't interfere with core principles of fair use and freedom for both creators and consumers of content. In addition to allowing for fair use, DRM solutions should preserve user privacy, and should allow end-users the ability to modify content for their own use and educational purposes, she says. End-users expect those kinds of freedoms with music and movies they buy today, Sohn points out. People make mix tapes of CDs or record TV shows to watch later all the time.

INTELLECTUAL PROPERTY IN THE LONG NOW

All the focus on creation and protection of digital content obscures another important dimension: preservation. We can read Sumerian clay tables written thousands of years ago, but digital files only a few years old are inaccessible due to obsolete file formats, obsolete hardware, forgotten compression algorithms, faded magnetic media or encryption. Creators of protected content generally want it to be available in libraries today, and accessible to scholars tomorrow. Yet the mechanisms they use to prevent unauthorized copying may frustrate the legitimate efforts of librarians and archivists.

Stewart Brand, founder of The Whole Earth Catalog, The Well and Global Business Network (GBN), among a long and varied set of accomplishments, is concerned that digital content may be more ephemeral than we think. In 1996, he and Danny Hillis co-founded the Long Now Foundation [DISCLOSURE: ESTHER DYSON IS A DIRECTOR] to address issues involving long time horizons.

"All the creators of this tsunami of digital data are financially punished for preserving it," says Brand, "but they feel if they turn it over to any other entity to preserve it that it will somehow escape their control. Their lawyers tell them it would be better to let it die."

The Internet Archive project (SEE RELEASE 1.0, MAY 1998) experiences these perverse incentives firsthand. The Archive, which attempts to preserve snapshots of as much of the Web as possible, now holds 10 billion Web pages back to 1996 on 100 terabytes of storage. It's often the only way to find Web pages and sites that are no longer online, and it's an invaluable tool for analyzing the Web's history, growth patterns and evolution. But because it automatically copies content, including rich media files, the Archive is arguably violating thousands of creators' copyrights.

Brand is participating in various workshops and initiatives to archive and preserve digital content better. "Commercial entities have short life spans," he points out. "When they die, whatever they thought they were preserving for their own eventual use evaporates." When a library subscribes to a scholarly journal in print form and the journal publisher shuts down, the old issues remain on the library shelves. If it's an online publication and the Website goes away, the archives disappear with it.

One project involving the Library of Congress, GBN and Stanford involves creating digital "dark caves" to preserve material for limited access by scholars, while keeping it protected against broader distribution.

Another project, LOCKSS (lots of copies keeps stuff safe) is being funded by Sun, Stanford, the Mellon Foundation and the National Science Foundation. It is developing technology to distribute redundant copies of data over a large number of repositories, with distributed error-correction mechanisms to ensure integrity. In other words, it's a special-purpose P2P content-distribution architecture (SEE RELEASE 1.0, JANUARY 2002 AND NOVEMBER 2000). This approach will allow libraries to maintain authoritative versions of Web-based electronic journals.

Archiving is one area where technology companies are no better than their entertainment-industry opponents. Notes Brand: "The technology industry is harnessed to Moore's Law and all that. Everything is zooming forward from version to version and platform to platform. Preservation is alien to everything they do and think."

On the other side of the divide, Hollywood and the music labels are starting to appreciate that archives make business sense. Record companies are remastering their classic back catalogs into high-priced box sets. Movie studios are finding that the extra scenes, trailers and other material they once threw away can be incorporated into expanded DVDs that users will eagerly purchase.

It's really only in the last five years, Sohn believes, that the pendulum has swung decisively toward greater intellectual property controls. Somewhere along the way, we lost sight of the way knowledge develops and creative expression builds on itself, she says. "Very few ideas – if any – just pop out of whole cloth. They are built on access to other ideas." The link between stronger intellectual property protection and more innovation is hardly universal.

"Before we talk about solutions, we need to ask whether there is a problem," Sohn says. "I'm not convinced there's a problem that needs the kind of draconian solutions that the content industry has in mind." For example, though clearly many people have obtained music through P2P file-trading and some are obtaining movies that way, has there really been any impact on sales of music and movies? The RIAA and MPAA argue there has, but other statistics point in the opposite direction. For example, early this month Jupiter Media Metrix released a survey reporting that 34 percent of experienced users of file-trading services say they now buy *more* music.

DigitalConsumer.org: a Bill of Rights for information

Joe Kraus and Graham Spencer were two of the five founders of Excite, which they left after its ill-fated merger with @Home. Over the past year and a half, they noticed with alarm the growing use of intellectual property law to constrain new technologies. "As technology entrepreneurs, our first concern was how an increasing amount of control using copyright would affect things like innovation," says Kraus. But they came to see these as more than just issues for technology vendors. Left out in the battles between technology companies and media companies was the group both of them pledged to serve: end-users. "It was clear that consumers weren't being represented at all in the debate," says Kraus.

They created DigitalConsumer.org to give voice to this silent majority. [DISCLOSURE: KEVIN WERBACH IS AN ENDORSER OF DIGITALCOSUMER.ORG, AS NOTED ON THE GROUP'S WEBSITE.] Kraus acknowledges that some may find the word "consumer" disempowering, preferring "customer," "citizen" or "user." But the nuance is less important than the role this group plays. All the other groups with a stake in digital IP issues are concerned with how content is created and delivered; end-users care what happens at *their* end of the chain.

"Media companies are trying to use copyright law to extend their control from how you get the work to how you use it," argues Kraus. For example, some DVDs don't allow viewer to fast-forward during previews at the beginning of movies. Because of the DMCA's anti-circumvention provisions, such restrictions are not just inconveniences; they are legally protected against any countermeasures by customers.

DigitalConsumer's solution is to establish affirmative rights of consumers, to go along with the rights content owners enjoy through intellectual property law. Notes Kraus: "Consumers are attacked on so many fronts that it's impossible to fight only defensive actions. The only way the consumers are going to be safe is to have positive

protections in the law." Many of the rights DigitalConsumer wants to enshrine, it turns out, are longstanding tenets of traditional IP law, such as fair use and the first sale doctrine. When you buy a CD, for example, you're allowed to make a personal copy onto a cassette tape to listen to in the car. But that wouldn't be possible with most DRM-based online music services.

DigitalConsumer's Bill of Rights has six elements:

- Users have the right to time-shift content that they have legally acquired.
- Users have the right to space-shift content that they have legally acquired.
- Users have the right to make backup copies of their content.
- Users have the right to use legally acquired content on the platform of their choice.
- Users have the right to translate legally acquired content into comparable formats.
- Users have the right to use technology in order to exercise the rights previously mentioned.

The Bill of Rights also ties back to Kraus and Spencer's original area of concern: innovation. "If we allow media companies to control how consumers use media, that's not only bad for the consumers, but bad for the tech companies as well," says Kraus. From speaking with VCs, Kraus already sees a chilling effect taking place. One prominent Silicon Valley VC said he wouldn't invest in the next Tivo because it would be a lawsuit waiting to happen, even if such a device filled genuine user demand and could be sold profitably in large numbers.

Having a concrete Bill of Rights would make the world safer for innovation, says Kraus: "If you're able to create a positive assertion of fair-use rights, essentially laying out territory that is safe for consumers, I believe that defines an area that is safe for technology companies to innovate in." DigitalConsumer is now talking with sympathetic members of the US Congress. It hopes to have a version of its Bill of Rights introduced as legislation within the next few months.

ChillingEffects.Org: the dogs that don't bark

When a Website owner receives a threatening cease-and-desist letter, he or she may not have any way to evaluate the legal validity of the claims involved. Exposure to legal liability is something few small or individual sites want. Often, moreover, the sites in question, including fan fiction and parodies, are within fair-use protections.

ChillingEffects.org was created as a resource for such situations. Founded at Harvard's Berkman Center, its participants now include EFF, Stanford Law School's Center for Internet & Society, and the Samuelson Law, Technology and Public Policy Clinic at Berkeley. The project's law student clinics help analyze cease-and-desist letters submitted to the site.

Says Wendy Seltzer, a fellow at the Berkman Center and an attorney in private practice, "A lot of activity online is stopped not just by the laws themselves but by chilling effects that form a shadow around the law." People, especially individuals and small businesses, don't want to be sued. If publishing certain content or developing certain ideas seems too risky, they will hold back, even when they would ultimately be vindicated in court. Unfortunately, though, it's hard to measure dogs that don't bark. Innovations that don't appear or aren't funded are the costs of over-reaching digital IP protections, and that's what ChillingEffects.org will highlight.

The project has two primary goals, says Seltzer. First, it seeks to inform recipients of cease-and-desist letters (and Internet users in general) about their rights, so that they can make a basic assessment of the demand. Second, it wants to build a database of letters to show the scope of the chilling effects, and to identify patterns in the type of demands being made. Whether the DMCA and other legislation stifle legitimate creative expression is an empirical question. Chilling Effects hopes to assemble the data to answer that question, and if needed to support changes in the law. It also hopes to educate law students and lawyers to the problems that overzealous members of their profession can create.

Since ChillingEffects.org launched at the end of February, it has cataloged about 200 letters. Seltzer says it's too early to draw extensive conclusions, but some trends are already emerging. For example, deep linking (providing direct links to a specific page on another site, bypassing welcome screens, branding and advertisements) has become a more common source of complaints lately.

Following its brush with the Church of Scientology, Google developed an ingenious partnership with Chilling Effects. When Google receives a DMCA cease-and-desist letter, it removes the links in question but places an announcement on its search results page. The announcement notes that content has been removed, and points users to Chilling Effects, which displays the original DMCA notice sent to Google. The notice must specify the allegedly infringing content, so Chilling Effects' Website shows the very URLs that Google deleted!

THE REDISCOVERY OF THE COMMONS

Many opponents of stricter information controls use the "information commons" as an organizing concept. A commons is a resource available to everyone in a community, for the benefit of all. In medieval England and colonial America, among other places, commons were parcels of land for public assembly or animal grazing. Most of those commons were eventually enclosed by private land-owners, who restricted or charged for access.

Information in the public domain is a commons, because anyone can draw upon it to create new inventions. So is the wireless spectrum, at least that part of it not parceled out through government-issued licenses (SEE RELEASE 1.0, NOVEMBER 2001). So is open-source software code (SEE RELEASE 1.0, NOVEMBER 1998).

Intellectual property law encloses the commons, which is not always a bad thing. Much innovation occurs because private actors can capture financial benefits from their inventions. But those innovations usually depend on the continued existence of some common resources outside the private sphere. The Internet, which was built on open code, open standards, government-funded research and government-funded networks, is a perfect example.

Author David Bollier, whose new book SILENT THEFT details the erosion of the commons, draws an analogy to the environmental movement. The "environment" is a relatively new concept. It was developed in the 1950s and 1960s as a unifying idea for a new social movement, to make people aware of the interconnected threats of pollution and resource depletion.

"I see the commons as having multiple tiers of meaning," says Bollier. "Just as we talk about the market as comprising everything from the stock market to derivatives futures to lemonade stands, there are many genres of commons." Specifically, he lists three categories:

- government-owned assets (the airwaves, public land)
- unpriced resources or "frontier commons" (the atmosphere, the human genome)
- gift economies and social networks (open-source)

The word commons is frequently associated with the tragedy of over-consumption explained by ecologist Garrett Hardin. However, the tragedy need not occur when the commons is a non-depletable resource.

"A real commons has some sort of community boundaries, so that it's not just accessible to anyone without limit," says Bollier. Those boundaries are often social norms, trust relationships and gift-economy rules or protocols, though government can also help enforce them, as we advocated in the open-spectrum context (SEE RELEASE 1.0, NOVEMBER 2001).

The commons notion is politically effective because it escapes the restrictive and often misleading dichotomy of markets vs. government. Says Bollier: "There's a void in our cultural categories. There are phenomena out there that aren't being adequately described. We can't talk frankly about cooperation or collaboration without being Red-baited or marginalized." Both private and government control mechanisms are encroachments on the commons. Markets are more efficient than governments at allocating scarce resources, and government may be more equitable. . . but neither is right for resources that need not be scarce.

Proponents of the information commons seek not to overthrow the market, but to protect it from itself. In a market economy, the commons is not just the exception that proves the rule, but also an invigorating force. Biotech research depends on having both patent protection as an incentive to pharmaceutical companies and a public human genome project that makes basic building blocks freely available. Manhattan's Central Park is so cherished because it sits in the center of the most commercially valuable patch of land in the country. And buildings with a view of Central Park are particularly valuable, by virtue of their proximity to open space.

Another successful exchange involved Sony's Aibo robotic dogs. A developer who goes by the handle Aibopet reverse-engineered the Sony software and wrote code to teach the dog new tricks. Sony lawyers sent Aibopet a cease-and-desist letter, claiming that putting new programs on the Aibo's memory stick constituted circumvention of Sony's copy protection. Aibopet sent the letter to ChillingEffects.org and spread the word among Aibo owners, who protested to Sony. In the end, the compa-

ny realized it was alienating its best customers. It backed off its demands. Furthermore, Sony decided to open the Aibo's programming interfaces so other could develop similar modifications.

Making Things Nicely Complicated

Black and white

The digital world tends to absolutes. In principle, information is either totally free – and therefore impossible for anyone to sell – or it's tightly controlled at every point. Every digital copy is as good as any other, so even one freely circulating example of a piece of content is enough to put that content into the hands of anyone who wants it, circumventing the payment mechanisms and distribution channels of the established industry. Once Napster and other P2P file-trading applications made plain this fact, and gave ordinary users an easy way to exploit it, the music industry was shaken to its core.

The content industries have responded to the threat of free IP by pushing the pendulum in the other direction. The Hollings bill, and the expansive use of the DMCA, represent an effort to put IP controls into place through the network. Hollywood is smart enough to realize that putting more barriers into place won't completely prevent piracy unless those barriers are embedded into every device and touch every end-user.

The result is the current standoff, with one side stoking fears of piracy to justify new legislation and the other demanding that content distributors transform their business model and give up most of their revenues overnight.

A similar sense of absolutism pervades many other Internet policy issues. Either broadband providers will keep their network platforms totally closed to others, stifling innovation, or they will be subject to intrusive government regulation mandating terms and price for open access. Either Microsoft is entitled to run roughshod over competitors however it wishes, or it should be dismembered as an intolerable monopolist. Either ICANN will have its hands so tied by procedure and consensus requirements that it will be totally ineffective, or it will become an un-accountable tool of the world's governments.

All the conventional outcomes have serious problems. But they are not the only choices. ICANN, for example, could be kept in the hands of clueful technical people without interference from policy-makers, or it chould be managed by a global democratic process. With prodding from government, voluntary broadband open access is occurring with some success in the real world.

Shades of grey

The absolutist nature of many worldviews in cyberspace is often a bug, not a feature. Instead of choosing among equally unsatisfactory extremes, the answer is to create room for tradeoffs in the middle.

This may sound like an unrealistic appeal along the lines of "Can't we all get along?" But the notions of balance and of limits to the extremes of intellectual property are actually deeply rooted in the legal and social tradition. "Copyright has never been a right which gives you absolutely complete control over every possible use of a creative work," says DigitalConsumer's Joe Kraus. He continues, "I don't have to buy the Britney Spears CD in order to sing her song in the shower."

Some of these traditional limits are embedded in the concept of fair use, which protects the reproduction of a small, necessary amount of content for comment, criticism, education, parody or research. Other limits are simply practical recognition that everyone is better off with some flexibility. The revenues record labels arguably lose because people make tapes for their friends are dwarfed by what it would cost to stamp out the practice, in terms of customer revolt as well as intrusive oversight and legal action.

Groups such as DigitalConsumer and Public Knowledge are working to shift the terms of the digital IP debate away from theft and towards notions of fair use and the commons. Copy-protection technologies should be implemented in ways that are sensitive to these principles.

The content industries aren't universally opposed to these notions. "It doesn't matter whether you call it fair use or you call it the kinds of consumer expectations that legitimate businesses should honor. One way or another, that's going to be incorporated into any solution," says Cary Sherman, president of the RIAA.

There are still huge challenges. "The facts of fair use cannot be embodied in logic, because the facts are specific to each case," argues EFF's Cory Doctorow. What makes

HAVEN'T WE BEEN THROUGH THIS BEFORE?

Copy protection on desktop software is a de facto shade of grey. Even though consumer software is a digital good just like music and movies, it is frequently distributed today without any of the digital rights management restrictions the content industries believe are essential. In the 1980s, customers rejected intrusive copy-protection mechanisms that required insertion of a master disk for the software to run.

Says DigitalConsumer's Joe Kraus, "The reason software companies aren't for things like the Hollings bill is that they have been through this before. Treating paying customers like criminals ended up being bad for business."

The software industry found other ways to preserve its revenue stream. Public awareness campaigns and enforcement actions by the Business Software Alliance, an industry trade group, cut down on software piracy in companies. Less intrusive copy protection methods such as serial numbers are not perfectly effective, but they are good enough to address the casual copying that would otherwise take place. And social mores factor in as well. End-users know software is valuable, and that they are supposed to pay for it. They may pirate it at the margins, but most are willing to pay most of the time. . . presuming that the fees involved seem reasonable for the product received.

In software, customers have two additional reasons to pay: support and upgrades. Britney Spears doesn't need either. However, ancillary revenue streams such as merchandise, community discussions, product placements and concert tickets could fill a similar role for music and video. The business models are out there.

something fair use isn't the act (excerpting a copyrighted work) but the *purpose* of the act (education, criticism, etc.). The legal system deals with such distinctions all the time, for example requiring "malice aforethought" for a killing to qualify as murder. But the legal system has humans making those determinations, not chips.

What do you want? We want information. . . information. . . information. . .
The root cause of all the tension is the slippery nature of information. Economists will tell you that information is "non-rivalrous" – my reading a Web page doesn't prevent you from reading the same exact page. Information goods also have near-zero marginal cost of production. In other words, even if it costs Microsoft billions of dollars to develop Windows XP, putting the software on each additional CD costs virtually nothing.

Finally, information isn't physical, so it doesn't respect physical or legal boundaries. Boundaries between geographic entities are an essential element of the law: You need to know where you are to determine what law applies. Boundaries are also important to determine identity and authority. If Al wants to sell a baby carriage to Ethel, he needs to convince her that it has some monetary value, and that it's his to sell.

These and other characteristics make it difficult to sustain businesses based on selling copies of digital goods (SEE RELEASE 1.0, JANUARY 1996 AND DECEMBER 1994). But there are other dimensions to the equation. The movie industry in the 1980s was worried that VCRs would destroy their business. Its chief lobbyists, Jack Valenti

(who today inveighs against P2P file-sharing) even likened VCRs to the Boston Strangler. And indeed, people's ability to rent movies whenever they want has dampened some of the enthusiasm for trekking to the theatre and paying up to $10 for the privilege of watching a film in the company of strangers eating noisy food. Yet that's only half the story. . . and it's the less-important half.

Far from damaging the movie industry, videotapes have become one of its biggest marketing mechanisms – and a revenue source in themselves. Today, the movie industry generates more revenues than ever. Forty-six percent of movie revenues now come from videotapes, compared to 26 percent at the box office.

Some substitutes are zero-sum, but many also open up new distribution channels. These new alternatives often change the nature of the base business – just as the advent of television turned radio into primarily a vehicle for music and for talk programming – but they don't necessarily make it less valuable.

In the case of information goods, there are at least three different kinds of businesses involved. The content businesses are part of a larger ecosystem. To use the famous Gillette analogy, they make their money selling blades. The hardware businesses, such as PC manufacturers and consumer-electronics device makers, make money selling the razors. Somewhere in the middle, and just starting to get off the ground, are service businesses (selling a blade-sharpening service).

Each group needs the other, though it naturally wants to reduce the market power of the other elements as much as possible, so as to capture more of the value itself.

Distribution vs. use

Intellectual property law was primarily designed to address how information moves from one place to another, allowing conditions such as payment to be enforced at the time of those transfers. The first sale doctrine in copyright law generally gives purchasers flexibility in what they do with content after they have purchased it. For example, I can buy a book then resell it on eBay, or give it to a friend. Similarly, radio stations don't need to get a license every time they play a song. Thanks to the mechanism of compulsory licenses, the radio station simply pays a statutory licensing fee to an intermediary agency that distributes it back to the publisher.

Because of this flexibility in traditional copyright law, the average end-user normally doesn't have to think about content licenses or similar complexities. He or she pays to purchase a book or a CD, and then uses it as desired.

"There's a really clear distinction between personal use and publishing," agrees Sherman of the RIAA. "The problem is that the technology hasn't been able to recognize the difference between personal use and publishing." Using Napster to obtain digital copies of CDs I already own is different from using it to download CDs I haven't paid for, but the two processes work exactly the same way. The same device that lets me record a TV show digitally to watch it tomorrow (analogous to the legal VCR function), also lets me fast-forward through commercials (something broadcasters oppose) and could easily let me download video programming from friends through the Internet (effectively a hardware Napster).

To solve the problem effectively, we must find ways to reintroduce boundaries and distinctions between distribution and use, and to meld old and new business models. For example, Tivo and similar devices threaten the advertising base of the broadcast business by allowing users to fast-forward through commercials. But these devices themselves provide a new, personalized and very rich channel for advertising that broadcasters can take advantage of.

Ideally, users would have a choice of this model or one in which they paid in return for being free of undesired ads. The challenge is not to force people to watch ads, but to make them tolerable, even desirable. Again, the intelligent box at the edge of the network could be a help rather than a hinderance. It can provide the necessary processing and secure environment to manage choices among business models. There must be flexibility, though, for vendors to implement such mechanisms. Secretive, all-or-nothing mandates, especially those backed by the threat or reality of government action, will produce destructive technologies of control instead of virtuous technologies of freedom.

Good for business

Though we've talked mostly about how freely available information benefits end-users, it's also valuable for business. "I'm increasingly convinced that business and commerce are more dependent on the commons than they understand," says SILENT THEFT author Bollier. Creative works draw up and recombine other works from the past. Scientists and technologists stand on the shoulders of giants, using earlier public research work as a foundation for their proprietary inventions.

Many companies involved in the debate over digital content acknowledge that the most absolute restrictions aren't necessarily in their interests. "Copy protection limits and expands what we can offer to the consumer," says Michael Epstein of Philips. He continues: "We pretty much know if you really cripple innovation. . . sooner or letter there is a bill to be paid." Unfortunately, the BPDG has so far been unwilling to support proposals from Philips, the EFF and DigitalConsumer, and most hearings on the Hollings bill have involved brow-beating the technology industry rather than looking for common ground.

RIAA president Sherman notes that his group hasn't officially endorsed the Hollings bill, though it does support technical mechanisms to protect digital content and has stated that some government involvement may be needed. "People regard this as copyright vs. technology. It shouldn't be that way," he says. "We are looking for opportunities to find common cause with the people who we have always regarded as our partners."

It's time to start finding that common ground. Otherwise, the costs in lost innovation, slow introduction of new digital entertainment services and erosion of the information commons will be considerable. Public Knowledge's Sohn offers both an invitation and a warning to the entertainment industry: "The genie is out of the bottle. Expectations are different. You can either figure out a way to make your content available at a reasonable price over the Internet, or you can say, 'screw you' to your customers and invite them to engage in more illegal activity." ■ R 1.0

COMING SOON

- Identity management.
- Grid computing.
- Large-group collaboration.
- The standards game.

- And much more. . . (If you know of any good examples of the categories listed above, please let us know.)

Resources & Contact Information

Wendy Seltzer, Berkman Center for Internet & Society at Harvard Law School, 1 (212) 715-7815; wendy@seltzer.com
Mike Godwin, Center for Democracy and Technology, 1 (202) 637-9800 x335; mnemonic@well.com
Molly Shaffer Van Houweling, Creative Commons, 1 (650) 724-3717; msvh@pobox.com
Joe Kraus, DigitalConsumer.org, 1 (650) 322-7122; joe@krausmail.com
Cory Doctorow, Electronic Frontier Foundation, 1 (415) 726-5209; doctorow@craphound.com
Andrew Shapiro, GreenOrder, 1 (212) 925-9140; fax, 1 (212) 925-9284; ashapiro@greenorder.com
Stewart Brand, Long Now Foundation, 1 (415) 331-9241; sb@gbn.org
Michael Epstein, Philips, 1 (914) 945-6239; michael.epstein@philips.com
Gigi Sohn, Public Knowledge, 1 (202) 518-0020; fax, 1 (202) 986-2539; gbsohn@publicknowledge.org
Cary Sherman, RIAA, 1 (202) 775-0101; fax, 1 (202) 775-7253
Lawrence Lessig, Stanford Law School, 1 (650) 736-0999; fax, 1 (650) 723-8440; lessig@pobox.com
David Bollier, 1 (413) 259-2009; bollier@essential.org

For further reading:

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David Bollier, Silent Theft (Routledge 2002), http://www.silenttheft.com
Andrew Shapiro, The Control Revolution (Century Foundation 1999), http://www.controlrevolution.com
Lawrence Lessig, The Future of Ideas (Random House 2001), http://cyberlaw.stanford.edu/future
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EFF Consensus at Lawyerpoint Weblog, http://bpdg.blogs.eff.org
Mike Godwin, "Hollywood vs. the Internet," http://www.reason.com/0205/fe.mg.hollywood.shtml
Stuart Lynn, "President's Report: ICANN – The Case for Reform," http://www.icann.org/general/lynn-reform-proposal-24feb02.htm

Calendar of High-Tech Events

	2002
JUNE 10-12	802.11 Planet Spring 2002 - Philadelphia, PA. See why and how unlicensed wireless is taking off and changing the nature of connectivity. Organized by INT Media Group. Contact Allison Alessio at registration@internet.com or 1 (203) 662-2857. http://www.intmediaevents.com/80211/spring02/ K
JUNE 17-18	WSJ Europe's 9th Annual CEO Summit - Paris, France. The premier Dow Jones Conference for global industry leaders. Looks at the changing face of Europe's technology landscape. Register online or contact Maxine Berry, +44 (0)20 7842-9679. www.djconferences.dj.com
JUNE 17-18	EyeforWireless 802.11 West - Seattle, WA. The West coast version of the 802.11 business networking event. For information call Thomas at 1 (800) 814-3459 x307 or send an email to thomas@eyeforwireless.com. www.eyeforwireless.com
JUNE 18-21	INET 2002 - Arlington, VA. The Internet Society's 12th annual conference looks at the intersection of technology and policy, including sessions on intellectual property in cyberspace and the future of the information commons. For more information, email info@inet2002.org or visit www.inet2002.org.
JULY 21-23	Digital Spectrum - La Jolla, CA. IDG's new executive conference on broadband digital media. More information and registration materials at http://www.idgexecforums.com/dspectrum/.
JUNE 25-27	TECHXNY - New York, NY. Formerly PC Expo, now a weeklong collection of tradeshows. Still one of the largest IT events in the country. For more info, call CMP Media at 1 (212) 600-3000, or visit www.techxny.com.
SEPTEMBER 9-13	Networld+Interop Fall 2002 - Atlanta, GA. The data networking industry's semi-annual showcase of the newest gear. Details on the Web at http://www.key3media.com/interop/atl2002/
JULY 22-26	O'Reilly Open Source Cenvention - San Diego, CA. A central gathering place for the open source community. Register online, or call Lisa Sloan, (707) 827-7000. www.conferences.oreillynet.com/os2002
SEPTEMBER 18-20	Pop!Tech 2002 - Camden, ME. A potent mix of visionaries, technologists, policy makers, and venture capitalists join to focus on the intersection of technology and society in the brave new world. To register, call 1 (800) 673-4855 or register online. www.poptech.org/home.cfm
NOVEMBER 3-5	EDventure's High-Tech Forum - Berlin, Germany. Save the date for our 12th European conference! For details, call Daphne Kis, 1 (212) 924-8800; fax, 1 (212) 924-0240; daphne@edventure.com; www.edventure.com. E

E Events Esther plans to attend.
K Events Kevin plans to attend.

Lack of a symbol is no indication of lack of merit. The full, current calendar is available on our Website, www.edventure.com. Please contact Irene Lawrence (irene@edventure.com) to let us know about other events we should include.

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